

## REMARKS

### **Office Action**

In the Office Action mailed June 28, 2006, the Examiner rejected claims 1-2, 5-12, and 14-20 under 35 U.S.C. 102(b) as being anticipated by Toda et al., U.S. Publ. No. 2002/0037100 (hereinafter "Toda"). Claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over Toda in view of Gleicher et al., U.S. Patent No. 5,218,431 (hereinafter "Gleicher"). Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Toda in view of Bryniarski et al., U.S. Patent No. 5,974,182 (hereinafter "Bryniarski"). Claim 13 was rejected under 35 U.S.C. 103(a) as being unpatentable over Toda in view of Sitka, U.S. Patent No. 6,330,572 (hereinafter "Sitka"). For reasons set forth more fully below, the grounds of rejection for these various claims are not supported by the cited references and, therefore, the grounds of rejection should be withdrawn and the claims allowed.

### **Section 102 Rejection**

Claim 1 has been amended to more specifically set out the elements of a method that may be used to manage the storage of image files in a host system. In this method, an image file stored in secondary storage of the host system is identified, the metadata corresponding to the identified image file is compared to a downgrade threshold, and the identified image is downgraded in response to this comparison. The downgraded file is stored in secondary storage and the identified image file is stored in tertiary storage. Tertiary storage is memory

having an access time that is greater than the access time for the secondary storage. This method enables the host system to store smaller versions of an image file in the faster secondary storage space while retaining the larger unprocessed image file in the slower memory space. This method enables more efficient utilization of the faster secondary storage in the host system.

The Examiner has rejected claim 1 under Section 102 over the Toda reference. The amendment presented above does not present new limitations as claims 2 and 11 were also rejected under Section 102 in the Office Action of June 28, 2006. Thus, the Examiner has asserted that all of the elements in the original claims 1, 2, and 11 are explicitly disclosed in the Toda reference. Such a reading of the Toda reference is erroneous.

The Toda reference fails to recognize the problem of managing secondary and tertiary memory in a host system. The Toda reference does not have a system that differentiates between the types of memory space available in its system based upon the access time of the various memory spaces. Secondly, the Toda reference does not compress an image file for storage in one type of memory space while also retaining a different version of the document in another type of memory space. Instead, the Toda reference is addressed to a type of file compression system that differentiates between the types of data within the file and compresses the two types of data differently. Specifically, the Toda reference distinguishes between image data and text data. The Toda reference addresses the problem of mixed data types in a single file by segregating the two types of data and compressing them differently. *Toda*, ¶s 2 and 3.

Because Toda addresses a very different problem, it does not examine the file metadata for an image file. Instead, it processes the content of an image file to identify the various types of data within the file and then compresses these different data types with different techniques. Consequently, Toda does not expressly teach nor does it suggest that file metadata for an identified image file be compared to a downgrade threshold. Additionally, the Toda reference does not make a decision to compress an image file in response to such a comparison. Instead, the Toda reference is silent regarding the selection of an image file for compression by the Toda system and, is likewise silent, regarding the location for storage of that compressed image. Once again, there is no teaching or suggestion within the Toda reference that both the original image and the compressed image are stored in different types of memory within the same system. As a result, the Toda reference does not teach or suggest the method limitations of storing the downgraded file in secondary storage while also storing the identified image file in a tertiary storage. For at least these reasons, the amended claim 1 is patentable over the Toda reference.

Claim 5 depends from claim 1 and is patentable for the reasons discussed with respect to claim 1. Additionally, claim 5 requires that the downgrading of the identified image file include reduction of the identified image file resolution to generate the downgraded file. Paragraph 6 of the Toda reference cited by the Examiner does not teach that the resolution of the entire image file is reduced. Instead, that paragraph requires that a non-text portion of the file be extracted and the resolution reduction only be performed on this portion of the image file.

Furthermore, the image file from which the non-text data are extracted is not identified with reference to metadata being compared to a downgrade threshold. For at least these reasons claim 5 is patentable over all the references of record, alone or in combination.

Claim 6 depends from claim 1 and is patentable for the reasons discussed with respect to claim 1. Additionally, claim 6 requires that the downgrading of the identified image file include reduction of the identified image file pixel size to generate the downgraded file. Paragraph 63 of the Toda reference cited by the Examiner does not teach that the bit size of the pixel in the image file is reduced. Instead, paragraph 63 requires that black pixels of a character text area in a binary image undergo thin-line conversion. The Toda reference does not state that black pixel reduction in thin-line conversion requires a reduction in the bit size of image pixels. The burden of proof is on the Examiner and it has not been met. For at least these reasons claim 6 is patentable over all the references of record, alone or in combination.

Claim 7 depends from claim 1 and is patentable for the reasons discussed with respect to claim 1. Additionally, claim 7 requires that the downgrading of the identified image file include conversion of a color image in the identified image file from one color format to another to generate the downgraded file. Paragraph 150 of the Toda reference cited by the Examiner does not teach that format conversion of a color image for file size reduction. Rather, paragraph 150 discloses the conversion of color image data from one color space to another for the purpose of color discrimination. The Toda reference does not state whether

the converted data is stored as compressed data for the file. Again, the burden of proof regarding the teachings of the cited reference has not been met. For at least these reasons, claim 7 is patentable over all the references of record, alone or in combination.

Claim 8 depends from claim 7 and is patentable for the reasons discussed with respect to claims 1 and 7. Additionally, claim 8 requires that the downgrading of the identified image file include conversion of a color image to a color palette version to generate the downgraded file. Paragraph 7 of the Toda reference cited by the Examiner does not teach that reduction of a color image is achieved by converting a color image to a color palette version. Instead, paragraphs 7 and 151 teach the use of color palette data for the purpose of selecting an appropriate compression method – not storage of color palette data as a compression of a color image. Therefore, the Toda reference does not support the asserted ground of rejection. For at least these reasons, claim 8 is patentable over all the references of record, alone or in combination.

Claim 9 depends from claim 1 and is patentable for the reasons discussed with respect to claim 1. Additionally, claim 9 requires that the downgrading of the identified image file include a combination of multiple downgrade operations to generate the downgraded file. Paragraph 135 of the Toda reference cited by the Examiner discloses an overview of the architecture for one embodiment of the Toda system. While Toda does use different reduction methods on different types of data, it does not select the files to process with reference to file metadata being compared to a downgrade threshold. Toda also fails to disclose

the storage of the file downgraded by multiple downgrade operations in one type of storage while also storing the original file in another type of storage. For at least these reasons claim 9 is patentable over all the references of record, alone or in combination.

Claim 10 depends from claim 1 and is patentable for the reasons discussed with respect to claim 1. Additionally, claim 10 requires that the downgrading of the identified image file include retrieval of a full resolution image from tertiary storage and the performance of a downgrade operation on the retrieved file to generate the downgraded file. Paragraphs 49 and 53 of the *Toda* reference cited by the Examiner do not teach this limitation. Paragraph 49 does not disclose the type of memory from which the original image is retrieved. Moreover, the reduced image discussed in paragraph 53 is used for detection of text areas and is not stored as a downgraded version of the original image. See *Toda*, ¶s 55-56. Consequently, *Toda* does not teach or suggest the limitations of claim 10. For at least these reasons, claim 10 is patentable over all the references of record, alone or in combination.

Claim 12 depends from claim 1 and is patentable for the reasons discussed regarding claim 1. Moreover, claim 12 requires that the comparison of the file metadata to the downgrade threshold include the comparison of the file metadata to a file frequency threshold. The Examiner has asserted that *Toda* describes such a comparison in paragraphs 64 and 94. Applicant respectfully disagrees as the comparison in paragraph 64 is with regard to a histogram computation of a threshold value for comparison to the actual pixel values in the

image file. The actual pixel values are not file metadata and the threshold computed from the histogram does not relate to the number of times that a file has been accessed for a particular time period. See *Specification*, p. 11, l. 11-14. With respect to paragraph 94, Applicant notes that the reduction parameter controller of Toda partitions the image data extracted from a file into 8 x 8 pixel blocks for the computation of an orthogonal transform. The coefficients of these transforms are compared to an unidentified threshold to determine a reduction parameter. This portion of the Toda reference does not teach comparison of metadata to a file frequency threshold. Specifically, the computation of the orthogonal transforms is for multiple blocks within the text data extracted from a file rather than metadata for the entire image file stored in secondary memory. Consequently, the Examiner has failed to explain how these orthogonal transforms explicitly relate to the file metadata set forth in claim 12. Additionally, the unidentified threshold is not explicitly identified as a file access frequency threshold in the Toda reference and the Examiner has failed to give any basis for concluding that the threshold is indeed a file access frequency threshold. Therefore, claim 12 is patentable over all references of record, alone or in combination.

Claim 14 depends from claim 1 and is patentable for the reasons discussed above with respect to that claim. Additionally, claim 14 requires that the comparison of the file metadata to the downgrade threshold include a comparison of the file metadata to a classification threshold. The Examiner has stated that this type of comparison is explicitly disclosed in the Toda reference at

paragraphs 87 and 89. Applicant respectfully disagrees. Paragraphs 87 and 89 are directed to the processing of text characters within extracted portions of an image file. Again, these paragraphs deal with processing of portions of the data content of an image file, rather than the file metadata associated with an image file as a whole. Consequently, Toda does not teach or suggest the comparison of file metadata to a classification threshold. For at least these reasons, claim 14 is patentable over all the references of record, alone or in combination.

Claim 15 is an independent claim that is directed to a system for managing image files in a host system. The system includes a file data volume, a file selector, a file reducer, and a file controller. Examiner has asserted that all of these elements are disclosed in the Toda reference. Applicant respectfully disagrees. Specifically, the Toda reference does not disclose a file data volume that stores file metadata corresponding to image files stored in a secondary storage for a host system. As set forth in Applicant's specification, the file metadata may be stored separately from the image file to which it corresponds. Consequently, file metadata do not contain the actual image data that are stored within a file and which will be downgraded if the comparison of the file metadata with a threshold indicates it should be. The architecture disclosed in paragraph 135 of the Toda reference, which was cited by the Examiner, does not disclose a file data volume for storing file metadata nor does it disclose any component for the comparison of file metadata to downgrade thresholds. Instead, the Toda reference is disclosing architecture for the function of compressing a file that contains both text and image data. Additionally, the Toda reference does not



teach nor suggest a file controller that both generates file metadata for storage in a file data volume and stores a downgraded file in secondary storage while also storing an identified image file in tertiary storage. Therefore, claim 15 is patentable over all references of record, alone or in combination.

Claim 17 depends from claim 15 and is patentable for at least the reasons discussed above with respect to claim 15. Additionally, claim 17 requires that the file reducer include a compressor for compressing the identified image file. While the Toda reference discloses a compressor for data files containing both text data and image data, it does not disclose the combination of a file compressor with the elements set forth in claim 17. Consequently, claim 17 is patentable over all the references of record, alone or in combination.

Claim 18 depends from claim 15 and is patentable for at least the reasons discussed above with respect to claim 15. Additionally, claim 18 requires that the file reducer include a color reducer for converting a color image from one format to another. While the Toda reference discloses color space conversion for purposes of text data detection, it does not teach or suggest the use of such conversion for image file downgrading and the storage of a file so downgraded in secondary storage. Consequently, claim 18 is patentable over all the references of record, alone or in combination.

Claim 19 depends from claim 15 and is patentable for at least the reasons discussed above with respect to claim 15. Additionally, claim 19 requires that the file reducer include an imager resolution reducer for reducing resolution of the identified image file. The section of Toda cited by the Examiner, ¶s 93-97,

to a reduction factor selection, but not to resolution reduction being used to compress a file that is stored in secondary storage while the original file is stored in tertiary storage. Consequently, claim 19 is patentable over all the references of record, alone or in combination.

Claim 20 depends from claim 15 and is patentable for at least the reasons discussed above with respect to claim 15. Additionally, claim 20 requires that the file reducer include a pixel size reducer for reducing the number of bits in a pixel for the identified image file. Paragraphs 103 and 106 of the Toda reference cited by the Examiner refer to thin-line conversion and this operation is performed to analyze text areas. This operation is not used to generate a downgraded file that is stored in secondary storage. Therefore, claim 20 is patentable over all references of record, alone or in combination.

### **Section 103 Rejection**

The Examiner rejected claim 3 under 35 U.S.C. 103(a). Claim 3 depends from claim 1 and is, therefore, patentable for at least the reasons set forth above with respect to that claim. Additionally, claim 3 requires that the downgrading of the identified image file include the performing of a lossless compression on the identified image file to generate the downgraded file. The Examiner stated in the Office Action that Toda is silent with respect to lossless compression. Applicant respectfully disagrees. The Toda reference does discuss the compression of the text data with an MMR compression. See, e.g., *Toda*, page 8, ¶ 128. The MMR compression technique is recognized as a lossless compression technique for

binary data. See, e.g., U.S. Patent No. 5,204,756, col. 8, l. 42-45. What Toda fails to teach is the application of lossless compression upon image data. The Gleicher reference does little to remedy this deficiency. Specifically, one of ordinary skill in the art would not be motivated to use the technique set forth in Gleicher to losslessly compress extracted image data in Toda. Instead, Toda discloses a system that takes advantage of the increased compression provided by the use of lossy compression techniques on image data without losing the data in the text, which is preserved through a lossless technique. If a lossless technique was used on the image data, there would be no need to separate the two types of data before compressing them. Therefore, the Examiner has failed to prove that one would combine the teachings of Gleicher with the Toda reference. Furthermore, the Toda reference acknowledges an awareness of both lossless and lossy compression techniques. The Toda reference, however, reserves lossless techniques for text data and lossy techniques for image data. Therefore, the Toda reference explicitly teaches away from the lossless compression of an entire image file as required by claim 3. Consequently, claim 3 is patentable over all the references of record, alone or in combination.

Claim 4 has been rejected under section 103(a) as well. Claim 4 depends from claim 1 and is patentable for at least the reasons discussed above with respect to that claim. Furthermore, claim 4 requires that the downgrading of the identified image file include the performance of a lossy compression on the identified image file. The Examiner has stated that the Toda reference is silent regarding the lossy compression of an image file. Again, Applicant respectfully

disagrees. As known in the art, the JPEG technique is a lossy compression technique for image data. See, e.g., U.S. Patent No. 7,099,514, col. 1, l. 51-55. Therefore, the Toda reference does teach the lossy compression of image data extracted from a file containing both text and image data. Nevertheless, the Toda reference does not teach the lossy compression of an image file that is selected after a comparison of file metadata for the file to a downgrade threshold. Consequently, claim 4 is also patentable over the cited references, alone or in combination.

Claim 13 was rejected under 35 U.S.C. 103(a). Claim 13 depends from claim 1 and is patentable for at least the reasons discussed above with respect to that claim. Additionally, claim 13 requires that the comparison of the file metadata to the downgrade threshold include a comparison of the file metadata to a last access time threshold. The Examiner has stated that such a comparison is taught in the Sitka reference. The Examiner is right that Toda is silent regarding a last access time threshold. Applicant also submits that Toda is silent regarding the comparison of file metadata to any type of threshold as it does not disclose nor does it suggest the use of file metadata anywhere in the reference. The portion of Sitka referenced by the Examiner also fails to teach the comparison of file metadata to a last access time threshold. Specifically, lines 30-37 of column 18 in Sitka discuss a shelf management policy that is used to determine when new media copies should be made of existing media. The shelf management policy is not a memory management technique and nowhere in the referenced section is file metadata identified nor is any last access time threshold

Amendment  
August 30, 2006

discussed. Consequently, there is no explicit teaching in the Sitka reference regarding comparison of file metadata to a last access time threshold that may be combined with the Toda reference to support the Section 103 ground of rejection. Furthermore, the Examiner has failed to state why one of ordinary skill in the art would combine a teaching regarding a shelf management policy with the compression system disclosed in the Toda reference. For at least these reasons, claim 13 is patentable over all the references of record, alone or in combination.

### **Conclusion**

For the reasons set forth above, pending claims 1, 3-10, 12-15, and 17-20, as amended, are patentable over all references of record. Reexamination and allowance of all pending claims are earnestly solicited.

Respectfully submitted,  
MAGINOT, MOORE & BECK LLP

A handwritten signature in black ink, appearing to read "David M. Lockman", is written over a horizontal line.

David M. Lockman  
Attorney for Applicant  
Registration No. 34,214

August 30, 2006  
Maginot, Moore & Beck LLP  
Chase Tower  
111 Monument Circle, Suite 3250  
Indianapolis, Indiana 46204-5109  
(317) 638-2922 Telephone  
(317) 638-2139 Facsimile